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A CONCISE GUIDE TO THE USE OF
THE GEOGRAPHIC COORDINATE DATA BASE (GCDB)
FOR WYOMING

Enclosed you will find self-extracting files containing all GCDB files collected to date in Wyoming for the county or counties requested, a supporting file GCDB.DWG which is an AutoCad(TM) file containing layer and block definitions necessary to successfully import these files into AutoCad, and 3 DOS executable files useful in formatting the GCDB information. File names indicate the NAD 27 datum referenced.

The self extracting files expand to approximately 4.5 times the compressed format so the total hard disk capacity required to successfully extract these files is 5.5 times their size. After copying the self-extracting files from the enclosed floppy disks, the user may extract the above files by typing the file name without the .EXE extension (i.e.: CAMPSPC1 or CAMPUTM1) and return from within the appropriate directory on their hard drive. When extracted, the datum that individual township files are reference to can be determined by the first letter of the file. A GCDB file with a "U" as it's first letter is referenced to the UTM 27 datum. A GCDB file with an "S" as it's first letter is referenced to the SPCS 27 datum.

There are 2 UTM 27 zones in Wyoming. All but 6 Wyoming counties fall entirely within one of these zones. For ease of use, GCDB county data sets for the 6 counties which span seperate UTM zones have been converted to the zone which covers the majority of that county. County data sets which have been converted to all UTM 27 zone 13 are: Bighorn and Washakie. County data sets which have been converted to all UTM 27 zone 12 are: Fremont, Hot Springs and Sweetwater. In Wyoming, SPCS 27 zones are defined by county boundaries. Wyoming county boundaries do not conform to the township boundaries. In those cases, a GCDB file for that township will exist in each county data set. In cases where adjoining counties are referenced to different UTM or SPCS zones, the duplicate GCDB file will also be referenced to seperate zones. Due caution should be excercized by the user to recognize and deal with this phenomena.

The user may notice the absence of some townships from the files provided. The absence of these files is due to the fact that some townships have been excluded from initial data collection due to difficulty and cost of producing this data. It is unknown if or when authority and funding to collect these townships will be given to us.

Below is a sample of the GCDB file for T55NR69W, 6th PM, Wyoming. This is representative of the file format for all GCDB files.

```
 TWP 55N   RNG 69W   PM   6 th            Wyoming(WY)   DATE 03/30/93
ORIGIN   444458.0000 1050925.0000      1.0   1.0000  502525.841487896.04
100100      444158.37   1051225.66  6000.0   7    11  489479.271469707.95
100120      444211.45   1051225.63  6000.0   9    11  489481.881471032.73
100140      444224.53   1051225.60  6000.0   9    11  489484.511472357.46
```

The first line of data is called a "header". It contains information regarding the Township, Range, Principal Meridian, state, and the date the data was processed.

The second line of data is an approximate origin, or center, of the township.

The remainder of the data in the SPC files consists of multiple lines which look like:

```
100120      444211.45   1051225.63   6000.0   9    11  489481.881471032.73
   |        |           |            |             |   |         |
GCDB Point  |           |            |             |   |         |
Identifier  |           |            |             |   |         |
            |-Latitude  |            |             |   |         |
            NAD27       |            |             |   |         |
                        |-Longitude  |             |   |         |
                          NAD27      |             |   |         |
                                     |             |   |         |
   Elevation data was processed at.-|             |   |         |
   In feet.                                        |   |         |
                                                   |   |         |
                     Unresolved error in feet-|   |         |
                                                       |         |
                SPC or UTM Easting to 2 decimals-|         |
                                                                 |
                     SPC or UTM Northing to 2 decimals-|
```

GCDB data was generated using the most recent official BLM survey records and in some cases private survey records provided by the Forest Service. The quality of these surveys vary widely. Correspondingly, the accuracy of the coordinates generated varies widely. GCDB is designed to maintain the spatial relationships as depicted on our official (legal) records. Any errors in the data are distributed in an unpredictable manner. Given this, the user must be aware that any acreages which this data may allow to be calculated are invalid.

Also included are 3 executable programs we have ported to a DOS platform.

The first program, MAKESCR.EXE was created to convert either UTM or SPC files to an AutoCad(TM) .SCR format. AutoCad is used by Wyoming GCDB staff to perform inspection of GCDB data. This software was chosen because of familiarity with it's operations and capabilities. Existance of this program is not an endorsement or recommendation of AutoCad or any AutoCad related software. Inclusion of township and section line data is automatic. Subdivision and non-rectangular data may be included at the option of the user.

The second program, ERRORS.EXE, creates an AutoCad .SCR file to import circles of radius maximum error into the graphics of the township. This is useful as a graphical depiction of unresolved error in each data set allowing the user to determine useability of GCDB for various applications.

As it is not our intent to suggest or mandate software for use of GCDB, the second program, SCR2DXF.EXE, was created to convert from the above AutoCad specific formats to a generic .DXF format. This allows importing GCDB data into software other than AutoCad.

These programs are provided as a courtesy to the user and no warranty is provided for the use or misuse of them. These programs allow creation of a graphics depiction of the PLSS, For each file input by the user, an output file is created. We suggest use of similar naming conventions to avoid confusion. For example, when inputting U22N112W an output name of U22N112W (addition of the extension is automatic) is suggested.

It is likely that minor errors in the data will be encountered from time to time. The GCDB is initial data only. Future improvements to this data by BLM is assumed but not assured. It is the responsibility of the user to recognize and correct minor errors which may exist. In addition, densification of the GCDB PLSS land grid beyond the data contained in these files is also the responsibility of the user. Finally, the executable programs provided were developed and used by Wyoming and may not be valid with data from other states.

If the user has any questions regarding Wyoming GCDB data, they should feel free to contact any of the following persons:

Milbert Krohn - GCDB Manager ----------- 307 775 6225
Paul Fisher --- GCDB Project Inspector - 307 775 6226
Gary Boyack --- GCDB Project Inspector - 307 775 6224

BATCHIT.DOC

BATCHIT.EXE is a self-extracting file which contains several public domain programs which can be used to batch process Wyoming GCDB files through the GCDB programs MAKESCR, SCR2DXF and ERRORS provided with GCDB data. The following is a description of the programs included in BATCHIT.EXE:

STUFFIT - A program written in ASSEMBLER and released to public domain by Terje W. Mathisen of Oslo, in January, 1991. While STUFFIT has many features not discussed in this document, one of it's main features is the ability to feed keystrokes to other executable programs. It is recommended the user read STUFFIT.DOC for full information regarding the capabilities of STUFFIT. STUFFIT.ASM is the assembler source code for the program. STUFFIT.EXE is the DOS executable and must be placed in a directory contained in your PATH statement in AUTOEXEC.BAT or the working directory for this process to work.

BS - This program was developed to facilitate processing of multiple GCDB files through the GCDB program MAKESCR. It requires a file named TPS.LST which is a list of the GCDB files the user wishes to process, one file per line. TPS.LST can be created via the DOS command:

"DIR S* /B > TPS.LST" (for SPCS) or "DIR U* /B > TPS.LST" (for UTM)

The resultant file TPS.LST should be checked to make sure it was created correctly. Once the TPS.LST file is acceptable, the program BS is run. This creates SCRS.BAT which is a DOS Batch file which uses STUFFIT to process every file in TPS.LST through MAKESCR automatically including subdivision and special surveys.

S2D - Similar process to BS except converts from SCR to DXF format using the GCDB program SCR2DXF. Requires the file SCRS.LST which is a list, one file per line, of all SCR files the user wishes to convert. As with the BS process, the user can create this file using the DOS command:

```
DIR *.SCR /B > SCRS.LST
```

Again, the user should check this file to ensure it was created correctly. Then the program S2D is run creating the DOS batch file DXFS.BAT which also uses STUFFIT to process files through SCR2DXF electronically feeding keystrokes that are normally required to be input manually.

ERRORS - To batch process multiple files through the program ERRORS, the user need only edit the DOS batch file DXFS.BAT with an ASCII editor and perform the following actions:

1) Eliminate all occurences of the text ".SCR".

2) Replace all occurences of the text "SCR2DXF" with the text "ERRORS".

The edited file can be saved as ERRS.BAT and run via DOS. This batch file will create an E*.SCR file for every GCDB file. The S2D process can be run again to convert to DXF format.

Here is a consise guide to the entire process on the previous page for Cambell County SPCS files. It is assumed this process is being run in a directory named CAMPBELL and that the GCDB files have been self extracted so there are 137 S* files. The DOS executable programs STUFFIT, MAKESCR, SCR2DXF, ERRORS, BS, and S2D are placed in a UTILS directory which is in my PATH statement in AUTOEXEC.BAT. Keystrokes are on the left while comments are on the right in parentheses. The <CR> keystroke denotes the carriage return or Enter key.

```
------------------------------------------------------------------------------
dir s* /b > tps.lst<CR>                   (Creates TPS.LST file)
bs<CR>                                    (Creates SCRS.BAT)
scrs<CR>                                  (Creates 137 .SCR files)
------------------------------------------------------------------------------
dir *.scr /b scrs.lst<CR>                 (Creates SCRS.LST file)
s2d<CR>                                   (Creates DXFS.BAT)
dxfs<CR>                                  (Creates 137 .DXF files)
------------------------------------------------------------------------------
```

Tests on a pentium 66 computer indicate this process saves an average of 15.7 seconds per file. While this may seem insignificant, I note that the total time saved for all 2,377 GCDB files available is over 10 hours. I leave it to the individual user to determine their usefulness.

My programs in this process were developed on personal time and personal computer equipment. I have decided to release them to the public domain as many users have found them to be useful. The STUFFIT files are public domain and I am merely making them available for your use. While all these programs have been run on a tremendous range of DOS systems with no reported problems, there is always a risk that these programs may cause unforseen problems on your particular system. Therefore, the warranty associated with these programs is exactly commensurate with their cost....... ZERO.

If you have problems or questions with this process, feel free to contact me by phone at 307-775-6225 or on the INTERNET at MIL.KROHN@CADASTRAL.COM

Milbert Krohn